

PENDING CLAIMS:

- 1           1.       (previously amended) A process of aligning and connecting at least one  
2                   optical fiber to at least one optoelectronic device to facilitate the coupling of  
3                   light between at least one optical fiber and at least one optoelectronic device,  
4                   comprising the steps of:  
5           positioning at least one optical element in a position relative to at least one  
6                   optoelectronic device in such a manner that when the device and element are in  
7                   a position proximate to each other, they would be in optical alignment, wherein  
8                   the at least one optoelectronic device is an array of vertical cavity surface  
9                   emitting lasers;  
10          depositing a first non-opaque material on the first end of at least one optoelectronic  
11                  device; and  
12          fixating the first end of at least one optical element proximate to the first end of at  
13                  least one optoelectronic device in such a manner that the first non-opaque  
14                  material contacts the first end of at least one optoelectronic device and the first  
15                  end of at least one optical element.
- 1           2. - 3. (previously canceled)
- 1           4.       (previously amended) A process as in claim 1, wherein the vertical cavity  
2                   surface emitting laser is an oxide vertical cavity surface emitting laser.
- 1           5.       (original) A process as in claim 1, wherein at least one optoelectronic device is  
2                   a photo-detector.
- 1           6.       (original) A process according to claim 1, wherein the first non-opaque  
2                   material comprises an adhesive.

- 1           7.       (original) A process according to claim 6, wherein the first non-opaque  
2                   material comprises an UV optical adhesive.
- 1           8.       (original) A process according to claim 1, wherein the first non-opaque  
2                   material functions to provide an optical path.
- 1           9.       (original) A process according to claim 1, wherein the first non-opaque  
2                   material functions to provide mechanical stability.
- 1           10.      (original) A process according to claim 1, wherein the first non-opaque  
2                   material comprises a gel.
- 1           11.      (original) A process according to claim 1, wherein the at least one optical  
2                   element is included in an array of optical elements.
- 1           12.      (original) A process according to claim 1, wherein at least one optical element  
2                   is an optical fiber.
- 1           13.      (original) A process according to claim 1, wherein at least one optical element  
2                   is a MT-type connector.
- 1           14.      (original) A process according to claim 1, wherein at least one optical element  
2                   is a ferrule.
- 1           15.      (original) A process according to claim 14, wherein at least one optical  
2                   element is a MT-like ferrule.
- 1           16.      (original) A process according to claim 1, wherein at least one optical element  
2                   is a lenslet array.

1 17. (original) A process according to claim 1, wherein at least one optical element  
2 is a diffractive optical element.

1 18. - 102. (previously canceled).

1 103. (previously amended) A process of aligning and connecting at least one  
2 optical fiber to at least one optoelectronic device to facilitate the coupling of  
3 light between at least one optical fiber and at least one optoelectronic device,  
4 comprising the steps of:

5 a) holding at least one optical element at the end of a first member of an alignment  
6 system, and holding at least one optoelectronic device on a second member of  
7 the alignment system, wherein the at least one optoelectronic device is an array  
8 of vertical cavity surface emitting lasers;

9 b) visually locating a target associated with at least one optoelectronic device;

10 c) illuminating at least one optical element with a light so that at least one optical  
11 element emits optical energy onto at least one optoelectronic device;

12 d) changing the relative positions of the optical energy and target so that the optical  
13 energy is visually aligned with the target; and

14 e) bringing the first end of at least one optical element proximate to a first end of at  
15 least one optoelectronic device in such a manner that a gap exists between the  
16 first end of at least one optoelectronic device and the first end of at least one  
17 optical element.

1 104. (original) A process according to claim 103, wherein visually locating a target  
2 comprises employing human vision and a microscope.

1 105. (original) A process according to claim 103, wherein visually locating a target  
2 comprises employing machine vision.

- 1        106.    (original) A process according to claim 103, wherein visually aligning the  
2                    optical energy with the target comprises employing human vision and a  
3                    microscope.
- 1        107.    (original) A process according to claim 103, wherein visually aligning the  
2                    optical energy with the target comprises employing machine vision.
- 1        108. – 109. (previously canceled).
- 1        110.    (original) An process as in claim 103, wherein the vertical cavity surface  
2                    emitting laser is an oxide vertical cavity surface emitting laser.
- 1        111.    (original) An process as in claim 103, wherein the optoelectronic device is a  
2                    photo-detector.
- 1        112.    (original) A process according to claim 103, wherein a side-view camera and a  
2                    video-image-measuring system are used to bring the first end of at least one  
3                    optical element proximate to the first end of at least one optoelectronic device.
- 1        113.    (original) A process according to claim 103, wherein laser triangulation is  
2                    used to bring the first end of at least one optical element proximate to the first  
3                    end of at least one optoelectronic device.
- 1        114.    (original) A process according to claim 103, wherein interference microscopy  
2                    is used to bring the first end of at least one optical element proximate to the  
3                    first end of at least one optoelectronic device.
- 1        115.    (original) A process according to claim 103, wherein the first member of an  
2                    alignment system is a high precision arm.

- 1        116.    (original) A process according to claim 103, wherein the second member of an  
2                   alignment system is a high precision stage.
- 1        117.    (original) A process according to claim 103, wherein at least one optical  
2                   element is an array of optical fibers.
- 1        118.    (original) A process according to claim 103, wherein at least one optical  
2                   element is an array of optical fibers.
- 1        119.    (original) A process according to claim 103, wherein the optical element is an  
2                   optical fiber.
- 1        120.    (original) A process according to claim 103, wherein the optical element is a  
2                   MT type connector.
- 1        121.    (original) A process according to claim 103, wherein the optical element is a  
2                   ferrule.
- 1        122.    (original) A process according to claim 103, wherein the optical element is a  
2                   MT-like ferrule.
- 1        123.    (original) A process according to claim 103, wherein the optical element is a  
2                   lenslet array.
- 1        124.    (original) A process according to claim 103, wherein the optical element is a  
2                   diffractive optical element.
- 1        125. - 136. (previously canceled)

1 137. (original) A process according to claim 1, wherein the positioning at least one  
2 optical element in a position relative to at least one optoelectronic device  
3 includes aligning 12 optical fibers relative to an optoelectronic device.

1 138. (previously canceled)

1 139. (previously added) A method of aligning and connecting at least one optical  
2 element to at least one optoelectronic device comprising:  
3 positioning at least one optical element in a position relative to at least one  
4 optoelectronic device in such a manner that when the device and element are in  
5 a position proximate to each other, they would be in optical alignment, wherein  
6 the at least one optoelectronic device is an array of photo-detectors;  
7 depositing a first non-opaque material on the first end of at least one optoelectronic  
8 device; and  
9 fixating the first end of at least one optical element proximate to the first end of at  
10 least one optoelectronic device in such a manner that the first non-opaque  
11 material contacts the first end of at least one optoelectronic device and the first  
12 end of at least one optical element.

1 140. (previously added) The method of claim 139, wherein the first non-opaque  
2 material comprises an adhesive.

1 141. (previously added) The method of claim 139, wherein the first non-opaque  
2 material comprises an UV optical adhesive.

1 142. (previously added) The method of claim 139, wherein the first non-opaque  
2 material functions to provide an optical path.